

III. CLAIM AMENDMENTS

1. (Currently Amended) A die system for extruding plastic products, said plastic flowing through a passage constructed in a series of assembled modules and extending from an upstream inlet to a downstream outlet, said products being formed in accordance with the cross section of the outlet of the system, said die system comprising:

at least one distribution module having a plurality of distribution channels constructed therein to form a portion of the die system passage, each of said distribution channels constructed to supply a portion of the plastic flow; ~~according to a predetermined ratio of the distribution channel cross section to the die system outlet cross section;~~

a die module having an extrusion passage constructed therein to form a portion of the die system passage to receive flowing plastic from said distribution channels and to extrude said plastic through the outlet of said die system to form the extruded product; and

wherein said die system outlet cross section is divided into preselected flow regions, said regions identified for their critical distribution requirements and at least some of which having irregular shape with different flow requirements; and

wherein, at least one of said distribution channels provides plastic flow directly to one of said flow ~~regions,~~ regions; and

further wherein the ~~area~~flow volume provided by ~~ef~~-said at least one distribution channel is determined by the ratio of the cross sectional area of the preselected region supplied thereby, to the cross sectional area of the die system outlet.

2. (Original) A die system for extruding plastic products, said plastic flowing through a passage constructed in a series of assembled modules and extending from an upstream inlet to a downstream outlet, said products being formed in accordance with the cross section of the outlet of the system, according to claim 1, wherein said die system further comprises:

at least one transition module having a plurality of transition channels constructed therein to form a portion of the die system passage, said transition channels communicating with said distribution channels to receive flowing plastic therefrom, said transition channels constructed to supply flowing plastic to one of said preselected flow regions of said die system outlet.

3. (Original) A die system for extruding plastic products, said plastic flowing through a passage constructed in a series of assembled modules and extending from an upstream inlet to a downstream outlet, said products being formed in accordance with the cross section of the outlet of the system, according to claim 1, wherein at least one of said distribution channels forms an independent regional flow stream, and wherein said regional flow stream is independently supplied with a different material for forming a component of the extruded plastic product.

4. (Original) A die system for extruding plastic products, said plastic flowing through a passage constructed in a series of

assembled modules and extending from an upstream inlet to a downstream outlet, said products being formed in accordance with the cross section of the outlet of the system, according to claim 1, wherein each of said distribution channels is constructed having a smaller cross section than the immediately upstream portion of said die system passage to create a funnel effect from said inlet to said outlet within each of the regional flow streams formed thereby.

5. (Original) A die system for extruding plastic products, said plastic flowing through a passage constructed in a series of assembled modules and extending from upstream inlet to a downstream outlet, said products being formed in accordance with the cross section of the outlet of the system, as described in claim 1, further comprising multiple, axially assembled, distribution modules wherein the number of distribution channels in adjacent downstream distribution modules is enlarged in predetermined steps to provide at least one distribution channel for each of said flow regions.

6. (Currently Amended) In an extrusion die system for extruding a plastic product, a passage for carrying flowing plastic, extending from an upstream inlet to a downstream outlet, said downstream outlet having a cross sectional profile which is divided into preselected regions, said regions identified for their critical distribution requirements and at least some of which having irregular shape with different flow requirements; said passage comprising:

a series of distribution channels, each channel designed to supply a regional plastic flow according to the volume of plastic required in one of said preselected

regions of said cross sectional ~~profile;~~profile, each of
said distribution channels having an outlet shaped to
conform to the region to which it supplies plastic flow; and

an extrusion channel communicating with said distribution channels to receive flowing plastic therefrom, and designed to extrude the plastic into a product having said cross sectional profile.

7. (Original) In an extrusion die system for extruding a plastic product, a passage for carrying flowing plastic, extending from an upstream inlet to a downstream outlet, said downstream outlet having a cross sectional profile which is divided into preselected regions, said passage, according to claim 6, further comprising:

a series of transition channels communicating with said distribution channels, and designed to direct said regional plastic flow to one of said preselected regions.

8. (Original) In an extrusion die system for extruding a plastic product, a passage for carrying flowing plastic, extending from an upstream inlet to a downstream outlet, said downstream outlet having a cross sectional profile which is divided into preselected regions, said passage, as described in claim 6 wherein at least one of said regional flow streams is independently supplied with a different material for forming an individual component of the extruded plastic product.

9. (Original) In an extrusion die system for extruding a plastic product, a passage for carrying flowing plastic, extending from an upstream inlet to a downstream outlet, said downstream outlet

having a cross sectional profile which is divided into preselected regions, said passage, according to claim 6, wherein each of the connected distribution channels is constructed having a smaller cross section than the immediately upstream portion of said passage to create a funnel effect within each of the regional flow streams formed thereby.

10. (Original) In an extrusion die system for extruding a plastic product, a passage for carrying flowing plastic, extending from an upstream inlet to a downstream outlet, said downstream outlet having a cross sectional profile which is divided into preselected regions, as described in claim 6 wherein said passage further comprises:

a plurality of axially assembled distribution modules, each of said modules having distribution channels constructed therein, wherein the number of distribution channels in adjacent downstream distribution modules is enlarged in predetermined steps to provide at least one distribution channel for each of said flow regions.

11. (Original) In an extrusion die system for extruding a plastic product, said system having a passage for supplying a flow of plastic extending from an upstream inlet to a downstream outlet, said downstream outlet having a cross sectional profile consistent with the cross section of the extruded product, a method of constructing an extrusion die system comprising the steps of:

analyzing said cross sectional profile to identify regions having predetermined flow requirements;

dividing the area of the cross sectional profile into said flow regions for the purpose of directing the supply of plastic;

calculating a ratio for each of said regional areas equal to the regional area divided by the total area of said cross sectional profile;

constructing at least one module for dividing the flow of plastic into multiple distribution channels for supplying a flow volume to a flow region in proportion to the ratio calculated for said region;

constructing a die module for forming the downstream outlet of the extrusion die system ; and

interconnecting said modules to supply the plastic flow to the outlet in alignment with the flow regions.

12. (Original) In an extrusion die system for extruding a plastic product, said system having a passage for supplying a flow of plastic extending from an upstream inlet to a downstream outlet, said downstream outlet having a cross sectional profile consistent with the cross section of the extruded product, a method of constructing an extrusion die system, according to claim 11, further including the step of constructing a transition module having transition channels constructed therein for receiving the flow of plastic from the distribution channels and directing said plastic flow to said flow regions.

13. (Original) In an extrusion die system for extruding a plastic product, said system having a passage for supplying a

flow of plastic extending from an upstream inlet to a downstream outlet, said downstream outlet having a cross sectional profile consistent with the cross section of the extruded product, a method of constructing an extrusion die system, according to claim 11, wherein at least one of said regional flow streams is independently supplied with a different material for forming a component of the extruded plastic product.

14. (Original) In an extrusion die system for extruding a plastic product, said system having a passage for supplying a flow of plastic extending from an upstream inlet to a downstream outlet, said downstream outlet having a cross sectional profile consistent with the cross section of the extruded product, a method of constructing an extrusion die system, as described in claim 11, wherein each of the distribution channels is constructed having a smaller cross section than the immediately upstream portion of said die system passage to create a funnel effect within each of the regional flow streams formed thereby.

15-17. (Cancelled)

18. (Currently Amended) An extrusion die having a passage for carrying plastic from an upstream inlet to a downstream outlet, to extrude plastic products in a specified profile comprising:

a plurality of identified flow regions which form part of the specified profile having predetermined plastic flow requirements;

a plurality of axial assembled distribution modules, each of said distribution modules having an array of distribution channels constructed therein, said array of channels expanding in

number in predetermined steps from an upstream distribution module to an adjacent downstream distribution module, to provide at least one flow channel for supplying plastic to each of said identified flow regions, wherein each of said distribution channels in a distribution module is constructed having a smaller cross section than the distribution channel of an immediately upstream module to provide a funnel effect from said inlet to said outlet within each of said at least one regional flow streams formed thereby.

19. (Original) An extrusion die having a passage for carrying plastic from an upstream inlet to a downstream outlet, to extrude plastic products having a specified profile, according to claim 18, wherein the number of channels in an array doubles from an upstream module to its adjacent downstream module.

20. (New) An extrusion die according to claim 18, wherein, said array of distribution channels is constructed to provide a reservoir for flowing plastic, thereby restraining said plastic flow at a predetermined rate to provide a uniform flow over the specified profile.